TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Date: 05-12-18

Lab ID	:	CP-RW-2018-12-31-139
Project Name	:	Package no.3 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Main Road in Kempegowdanagara in Ward No. 09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	03-12-18
Type of Mix	:	BC-Plant (Bituminous Concrete)
Date of test	:	03-12-18
Oven Dry Weight	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	89	89	1.8	98.2	90-100
9.5	704	793	15.9	84.1	70-88
4.75	893	1686	33.7	66.3	53-71
2.36	587	2273	45.5	54.5	42-58
1.18	495	2768	55.4	44.6	34-48
0.6	503	3271	65.4	34.6	26-38
0.3	531	3802	76.0	24.0	18-28
0.15	452	4254	85.1	14.9	12-20
0.075	350	4604	92.1	7.9	4-10
PAN	396	5000	100	0.0	0

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : **CP-RW-2018-12-31-139** **Date: 06-12-18**

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Main Road in Kempegowdanagara in Ward No. 09 Vidyaranyapura Sub Division.

Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.

Customer Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 03-12-18

Type of Mix : BC(Bitumenous Concrete)

Date of test : 03-12-18

Type of Binder : 60/70

% of Binder Used : 5.0%

Weight of Aggregate : 200.0 gm

Weight of Binder : 10.0 gm

Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.5	1.5		

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID	:	**CP-RW-2018-12-31-139**	Date: 06-12-18
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Main Road in Kempegowdanagara in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	03-12-18	
Type of Mix	:	BC (Bituminous Concrete)	
Date of test	:	03-12-18	

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.5	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	12.1		
Strength	Aggregate Impact Value	22.1	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.68	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.21	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : **CP-RW-2018-12-31-139** **Date: 06-12-18**

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Main Road in Kempegowdanagara in Ward No. 09 Vidyaranyapura Sub Division.

Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.

Customer Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 03-12-18

Type of Mix : BC (Bituminous Concrete)

Date of test : 03-12-18

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.12	11.14	10KN(min)
2	Marshal flow at 60°C, mm	3.53	3.52	2-4
3	Percent air Voids	4.81	4.82	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.24	14.28	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	71.63	65-75
6	Density, g/cc	2.25	2.26	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID	:	CP-RW-2018-12-31-139 **Date: 12-12-18**
Name of Work	:	Improvements and Asphalting to Main Road in Kempegowdanagara in Ward No. 09 Vidyaranyapura Sub Division.
Project Name	:	Package no.3 (Package Consists of 21 Works)
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	10-12-18
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	10-12-18

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	471	472
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	5.8	5.6
4	Average percentage	%	5.7	

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Lab ID : CP-RW-2018-12-31-139

Date: 12-12-18

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 471

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.8	62.2	53-71
2.36	88	266	56.5	43.5	42-58
1.18	29	295	62.6	37.4	34-48
0.6	11	306	65.0	35.0	26-38
0.3	46	352	74.7	25.3	18-28
0.15	45	397	84.3	15.7	12-20
0.075	55	452	96.0	4.0	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 472

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.7	62.3	53-71
2.36	88	266	56.4	43.6	42-58
1.18	29	295	62.5	37.5	34-48
0.6	11	306	64.8	35.2	26-38
0.3	46	352	74.6	25.4	18-28
0.15	45	397	84.1	15.9	12-20
0.075	54	451	95.6	4.4	4-10

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Format No: CP/TF/01

TEST REPORT ON BITUMEN

Date: 01-12-18

Lab ID	:	CP-RW-2018-12-31-139
Project Name	:	Package no.3 (Package Consists of 21 Works)
Name of work	:	Improvements and Asphalting to Main Road in Kempegowdanagara in Ward No. 09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.
Customer's Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	28-11-18
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	28-11-18

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	65	60 to 70
2	Softening Point, °C	51.4	Min. 40°C
3	Ductility, cm	98	Min. 75cm
4	Flash point, °C	246	Min. 220°C
	Fire point, °C	273	

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DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID : CP-RW-2018-12-31-139 **Date: 11-12-18**

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Main Road in Kempegowdanagara in Ward No. 09 Vidyaranyapura Sub Division.

Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.

Date of Receipt : 10-12-18

Type of Mix : Tack coat

Date of test : 10-12-18

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.764
4	Final weight of plate after application of tack Coat (c)	Kg	0.803	0.787
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

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TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	CP-RW-2018-12-31-139	**Date: 08-12-18**
Project Name	:	Package No.03 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.	
Customer Reference	:	BBMP/EE/BTP/148/2018-19	
Date of Receipt	:	06-12-18	
Type of Mix	:	WMM (Wet Mix Macadam)	
Date of test	:	06-12-18	
Oven Dry Weight	:	11000	Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	315	315	2.9	97.1	95-100
22.4	2359	2674	24.3	75.7	60-80
11.2	2279	4953	45.0	55.0	40-60
4.75	2251	7204	65.5	34.5	25-40
2.36	1721	8925	81.1	18.9	15-30
0.6	623	9548	86.8	13.2	8-22
0.075	1338	10886	99.0	1.0	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	CP-RW-2018-12-31-139 **Date: 08-12-18**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	06-12-18
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	06-12-18

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	CP-RW-2018-12-31-139
Project Name	:	Package No.03 (Package Consists of 21 Works) **Date: 08-12-18**
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	06-12-18
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	06-12-18

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.3%	

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TEST RESULTS OF GRADATION FOR BM
(IS 2386:(Part 1) 1963 (RA2011)

Date: 17-12-18

Lab ID	:	CP-RW-2018-12-31-139
Project Name	:	Package No.03 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	14-12-18
Type of Mix	:	BM-Plant (Bituminous Macadam)
Date of test		14-12-18
Weight of Sample(gm)	:	5000

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0	100	100
19	165	165	3.3	96.7	90-100
13.2	512	677	13.5	86.5	56-88
4.75	2759	3436	68.7	31.3	16-36
2.36	911	4347	86.9	13.1	4-19
0.3	358	4705	94.1	5.9	2-10
0.075	232	4937	98.7	1.3	0-8
PAN	63	5000	100.0	0.0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS MACADAM

Date: 17-12-18

Lab ID	:	**CP-RW-2018-12-31-139**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	14-12-18
Type of Mix	:	BM (Bituminous Macadam)
Date of test	:	14-12-18

Table 500-6 : Physical Requirements fo Coarse Aggregate for Bituminous Macadam

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	13.8	Combined Flakiness & Elongation Index for BM is Maximum 35%	IS:2386 Part I
	Elongation Index	7.2		
Strength	Aggregate Impact Value	25.2	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.51	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.17	Maximum 2%	IS:2386 Part III

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2018-12-31-139** **Date: 17-12-18**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	14-12-18
Type of Mix	:	BM(Bitumnous Macadam)
Date of test	:	14-12-18

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : CP-RW-2018-12-31-139 **Date: 17-12-18**

Project Name : Package No.03 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.

Agency : Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.

Customer Reference : BBMP/EE/BTP/148/2018-19

Date of Receipt : 14-12-18

Type of Mix : BM (Bituminous Mecadam)

Date of test : 14-12-18

The results of the tests conducted on the Bituminous Macadam mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.79	11.82	9KN(Min)
2	Marshal flow at 60°C, mm	3.59	3.87	2-4
3	Percent air Voids	4.56	4.17	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.56	14.74	13-15
5	Percent Voids filled with Bitumen(VFB %)	68.99	70.52	65-75
6	Density, g/cc	2.42	2.40	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BM
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	CP-RW-2018-12-31-139	**Date: 26-12-18**
Project Name	:	Package No.03 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.	
Customer Reference	:	BBMP/EE/BTP/148/2018-19	
Date of Receipt	:	24-12-18	
Type of Mix	:	BM (Bituminous Macadam)	
Date of test	:	24-12-18	

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	479	478
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.2	4.4
4	Average percentage	%	4.30	

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Lab ID : CP-RW-2018-12-31-139 **Date: 26-12-18**

AFTER EXTRACTION(Trail-1)

Weight of Sample : 479 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0.0	100.0	100
19	38	38	7.9	92.1	90-100
13.2	147	185	38.6	61.4	56-88
4.75	191	376	78.5	21.5	16-36
2.36	28	404	84.3	15.7	4-19
0.3	32	436	91.0	9.0	2-10
0.075	31	467	97.5	2.5	0-8

AFTER EXTRACTION(Trail-2)

Weight of Sample : 478 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0.0	100.0	100
19	38	38	7.9	92.1	90-100
13.2	147	185	38.7	61.3	56-88
4.75	191	376	78.7	21.3	16-36
2.36	28	404	84.5	15.5	4-19
0.3	32	436	91.2	8.8	2-10
0.075	31	467	97.7	2.3	0-8

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Date: 22-12-18

Lab ID	:	CP-RW-2018-12-31-139
Project Name	:	Package No.03 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	20-12-18
Type of Mix	:	BC-Plant (Bituminous Concrete)
Date of test	:	20-12-18
Oven Dry Weight	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	89	89	1.8	98.2	90-100
9.5	702	791	15.8	84.2	70-88
4.75	893	1684	33.7	66.3	53-71
2.36	587	2271	45.4	54.6	42-58
1.18	492	2763	55.3	44.7	34-48
0.6	503	3266	65.3	34.7	26-38
0.3	528	3794	75.9	24.1	18-28
0.15	458	4252	85.0	15.0	12-20
0.075	350	4602	92.0	8.0	4-10
PAN	398	5000	100	0.0	0

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Date: 22-12-18

Lab ID	:	**CP-RW-2018-12-31-139**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	20-12-18
Type of Mix	:	BC(Bitumenous Concrete)
Date of test	:	20-12-18

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.5	1.5		

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID : **CP-RW-2018-12-31-139** **Date: 22-12-18**

Project Name : Package No.03 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.

Agency : Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.

Customer Reference : BBMP/EE/BTP/148/2018-19

Date of Receipt : 20-12-18

Type of Mix : BC (Bituminous Concrete)

Date of test : 20-12-18

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.6	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.9		
Strength	Aggregate Impact Value	22.3	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.67	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.23	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2018-12-31-139** **Date: 22-12-18**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	20-12-18
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	20-12-18

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.16	11.14	10KN(min)
2	Marshal flow at 60°C, mm	3.54	3.56	2-4
3	Percent air Voids	4.82	4.83	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.26	14.28	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.89	71.73	65-75
6	Density, g/cc	2.24	2.25	_

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID	:	**CP-RW-2018-12-31-139**	**Date: 31-12-18**
Project Name	:	Package No.03 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.	
Customer Reference	:	BBMP/EE/BTP/148/2018-19	
Date of Receipt	:	28-12-18	
Type of Mix	:	BC (Bituminous Concrete)	
Date of test	:	28-12-18	

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	472	473
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	5.60	5.40
4	Average percentage	%	5.5	

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Date: 31-12-18

Lab ID : CP-RW-2018-12-31-139

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 472

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.7	62.3	53-71
2.36	88	266	56.4	43.6	42-58
1.18	29	295	62.5	37.5	34-48
0.6	11	306	64.8	35.2	26-38
0.3	46	352	74.6	25.4	18-28
0.15	45	397	84.1	15.9	12-20
0.075	55	452	95.8	4.2	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 473

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.6	62.4	53-71
2.36	88	266	56.2	43.8	42-58
1.18	29	295	62.4	37.6	34-48
0.6	11	306	64.7	35.3	26-38
0.3	46	352	74.4	25.6	18-28
0.15	45	397	83.9	16.1	12-20
0.075	55	452	95.6	4.4	4-10

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TEST REPORT ON BITUMEN

Lab ID	:	**CP-RW-2018-31-12-139**	**Date: 12-12-18**
Project Name	:	Package No.03 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.	
Customer's Reference	:	BBMP/EE/BTP/148/2018-19	
Date of Receipt	:	11-12-18	
Sample Type	:	Bitumen	
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)	
Date of test	:	11-12-18	

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	66	60 to 70
2	Softening Point, °C	51.4	Min. 40°C
3	Ductility, cm	98	Min. 75cm
4	Flash point, °C	248	Min. 220°C
	Fire point, °C	274	

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID : CP-RW-2018-12-31-139 Date: 31-12-18

Project Name : Package No.03 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at HMT Layout, HCHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.

Agency : Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.

Customer Reference : BBMP/EE/BTP/148/2018-19

Date of Receipt : 29-12-18

Type of Mix : BC (Bituminous Concrete)

Date of test : 29-12-18

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	470	471
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	6.0	5.8
4	Average percentage	%	5.9	

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Lab ID : CP-RW-2018-12-31-139 Date: 31-12-18

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.9	62.1	53-71
2.36	88	266	56.6	43.4	42-58
1.18	29	295	62.8	37.2	34-48
0.6	11	306	65.1	34.9	26-38
0.3	46	352	74.9	25.1	18-28
0.15	45	397	84.5	15.5	12-20
0.075	49	446	94.9	5.1	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 471

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.8	62.2	53-71
2.36	88	266	56.5	43.5	42-58
1.18	29	295	62.6	37.4	34-48
0.6	11	306	65.0	35.0	26-38
0.3	46	352	74.7	25.3	18-28
0.15	45	397	84.3	15.7	12-20
0.075	55	452	96.0	4.0	4-10

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Date: 02-01-19

Lab ID	:	CP-RW-2018-12-31-139
Project Name	:	Package No.03 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301,3rd Main Block, HRBR Layout, Kalyan Nagar Banglore-560043.
Customer Reference	:	BBMP/EE/BTP/148/2018-19
Date of Receipt	:	31-12-18
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	31-12-18

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	474	475
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	5.20	5.00
4	Average percentage	%	5.1	

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Lab ID : CP-RW-2018-12-31-139 Date: 02-01-19

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 474

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	13.9	86.1	70-88
4.75	112	178	37.6	62.4	53-71
2.36	88	266	56.1	43.9	42-58
1.18	29	295	62.2	37.8	34-48
0.6	11	306	64.6	35.4	26-38
0.3	46	352	74.3	25.7	18-28
0.15	45	397	83.8	16.2	12-20
0.075	55	452	95.4	4.6	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 475

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	13.9	86.1	70-88
4.75	112	178	37.5	62.5	53-71
2.36	88	266	56.0	44.0	42-58
1.18	29	295	62.1	37.9	34-48
0.6	11	306	64.4	35.6	26-38
0.3	46	352	74.1	25.9	18-28
0.15	45	397	83.6	16.4	12-20
0.075	55	452	95.2	4.8	4-10

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DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID : CP-RW-2018-12-31-139 **Date: 29-12-18**

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.

Customer Reference : BBMP/EE/BTP/148/2018-19

Date of Receipt : 28-12-18

Type of Mix : Tack coat

Date of test : 28-12-18

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.764
4	Final weight of plate after application of tack Coat (c)	Kg	0.803	0.787
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

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DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID : CP-RW-2018-12-31-139 **Date: 30-12-18**

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.

Customer Reference : BBMP/EE/BTP/148/2018-19

Date of Receipt : 29-12-18

Type of Mix : Tack coat

Date of test : 29-12-18

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.77	0.79
4	Final weight of plate after application of tack Coat (c)	Kg	0.793	0.813
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.02
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

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DETERMINATION OF RATE OF SPREAD TACK COAT

Date: 01-01-19

Lab ID : CP-RW-2018-12-31-139

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at HMT Layout, IECHS Layout and Surrounding Areas in Ward no.09 Vidyaranyapura Sub Division.

Customer Reference : BBMP/EE/BTP/148/2018-19

Date of Receipt : 31-12-18

Type of Mix : Tack coat

Date of test : 31-12-18

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.79	0.75
4	Final weight of plate after application of tack Coat (c)	Kg	0.813	0.773
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2018-12-31-139**	**Date: 05-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	02-01-19	
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)	
Date of test	:	02-01-19	

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.3
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.1
5	Aggregate impact value	(B/A)*100	24.6	24.8
6	Aggregate impact value (Mean of two tests)	Pecentage	24.7	

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	CP-RW-2018-12-31-139	**Date: 05-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name Of Work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	02-01-19	
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)	
Date of test	:	02-01-19	

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.9%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.7%	
Combined Flakiness and Elongation Index for WMM	25.6%	

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TEST RESULTS OF GRADATION FOR BM
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	CP-RW-2018-12-31-139 **Date: 16-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	14-01-19
Type of Mix	:	BM-Plant (Bituminous Macadam)
Date of test		14-01-19
Weight of Sample(gm)	:	5000

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0	100	100
19	165	165	3.3	96.7	90-100
13.2	512	677	13.5	86.5	56-88
4.75	2759	3436	68.7	31.3	16-36
2.36	911	4347	86.9	13.1	4-19
0.3	358	4705	94.1	5.9	2-10
0.075	232	4937	98.7	1.3	0-8
PAN	63	5000	100.0	0.0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS MACADAM

Lab ID	:	**CP-RW-2018-12-31-139**	**Date: 16-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	14-01-19	
Sample ID No	:	2018-01-03-01/01	
Type of Mix	:	BM (Bituminous Macadam)	
Date of test	:	14-01-19	

Table 500-6 : Physical Requirements fo Coarse Aggregate for Bituminous Macadam

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	13.8	Combined Flakiness & Elongation Index for BM is Maximum 35%	IS:2386 Part I
	Elongation Index	7.2		
Strength	Aggregate Impact Value	25.2	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.51	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.17	Maximum 2%	IS:2386 Part III

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2018-12-31-139** **Date: 16-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)
Name of Work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	14-01-19
Type of Mix	:	BM(Bitumnous Macadam)
Date of test	:	14-01-19

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2018-12-31-139**	**Date: 16-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	14-01-19	
Sample ID No	:	2018-01-03-01/01	
Type of Mix	:	BM (Bituminous Mecadam)	
Date of test	:	14-01-19	

The results of the tests conducted on the Bituminous Macadam mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.29	11.82	9KN(Min)
2	Marshal flow at 60°C, mm	3.54	3.87	2-4
3	Percent air Voids	4.56	4.17	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.54	14.76	13-15
5	Percent Voids filled with Bitumen(VFB %)	68.98	70.28	65-75
6	Density, g/cc	2.42	2.40	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BM
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2018-12-31-139**	**Date: 29-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	28-01-19	
Type of Mix	:	BM (Bituminous Macadam)	
Date of test	:	28-01-19	

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	479	478
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.3	4.5
4	Average percentage	%	4.4	

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Lab ID : **CP-RW-2018-12-31-139** **Date: 29-01-19**

AFTER EXTRACTION(Trail-1)

Weight of Sample : 479 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0.0	100.0	100
19	38	38	7.9	92.1	90-100
13.2	147	185	38.7	61.3	56-88
4.75	191	376	78.6	21.4	16-36
2.36	28	404	84.4	15.6	4-19
0.3	32	436	91.1	8.9	2-10
0.075	31	467	97.6	2.4	0-8

AFTER EXTRACTION(Trail-2)

Weight of Sample : 478 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0.0	100.0	100
19	38	38	8.0	92.0	90-100
13.2	147	185	38.7	61.3	56-88
4.75	191	376	78.7	21.3	16-36
2.36	28	404	84.6	15.4	4-19
0.3	32	436	91.3	8.7	2-10
0.075	31	467	97.8	2.2	0-8

Note:-
The results pertain to the samples received and tested.
All information Furnished by Customer/ Representative
Any correction in the report will make this report invalid.
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	CP-RW-2018-12-31-139	**Date: 23-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	19-01-19	
Type of Mix	:	BC-Plant (Bituminous Concrete)	
Date of test	:	19-01-19	
Oven Dry Weight	:	5000	Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	88	88	1.8	98.2	90-100
9.5	703	791	15.8	84.2	70-88
4.75	896	1687	33.7	66.3	53-71
2.36	586	2273	45.5	54.5	42-58
1.18	494	2767	55.3	44.7	34-48
0.6	503	3270	65.4	34.6	26-38
0.3	526	3796	75.9	24.1	18-28
0.15	458	4254	85.1	14.9	12-20
0.075	350	4604	92.1	7.9	4-10
PAN	396	5000	100	0.0	0

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2018-12-31-139**	**Date: 23-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	19-01-19	
Type of Mix	:	BC(Bitumenous Concrete)	
Date of test	:	19-01-19	

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.2	Minimum Retained Coating 95%
2	98.0	2.0		
3	98.0	2.0		

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID : CP-RW-2018-12-31-139 **Date: 23-01-19**

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.

Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.

Work Order Ref : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 19-01-19

Type of Mix : BC (Bituminous Concrete)

Date of test : 19-01-19

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.5	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	12.1		
Strength	Aggregate Impact Value	22.2	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.63	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.21	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : **CP-RW-2018-12-31-139** **Date: 23-01-19**

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.

Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.

Work Order Ref : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 19-01-19

Type of Mix : BC (Bituminous Concrete)

Date of test : 19-01-19

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.12	11.14	10KN(min)
2	Marshal flow at 60°C, mm	3.52	3.51	2-4
3	Percent air Voids	4.82	4.83	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.26	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	71.63	65-75
6	Density, g/cc	2.25	2.26	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID	:	**CP-RW-2018-12-31-139**	**Date: 02-02-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of Work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	31-01-19	
Type of Mix	:	BC (Bituminous Concrete)	
Date of test	:	31-01-19	

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	470	471
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	6.00	5.80
4	Average percentage	%	5.9	

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

AEE (VRP) SD

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Date: 02-02-19

Lab ID : CP-RW-2018-12-31-139

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.0	86.0	70-88
4.75	114	180	38.3	61.7	53-71
2.36	88	268	57.0	43.0	42-58
1.18	29	297	63.2	36.8	34-48
0.6	13	310	66.0	34.0	26-38
0.3	46	356	75.7	24.3	18-28
0.15	45	401	85.3	14.7	12-20
0.075	50	451	96.0	4.0	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 471

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	5	5	1.1	98.9	90-100
9.5	61	66	14.0	86.0	70-88
4.75	114	180	38.2	61.8	53-71
2.36	88	268	56.9	43.1	42-58
1.18	29	297	63.1	36.9	34-48
0.6	11	308	65.4	34.6	26-38
0.3	46	354	75.2	24.8	18-28
0.15	45	399	84.7	15.3	12-20
0.075	52	451	95.8	4.2	4-10

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End of Report

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TEST REPORT ON BITUMEN

Lab ID	:	CP-RW-2018-12-31-139	**Date: 09-01-19**
Project Name	:	Package no.3 (Package Consists of 21 Works)	
Name of work	:	Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.	
Work Order Ref	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	08-01-19	
Sample Type	:	Bitumen	
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)	
Date of test	:	08-01-19	

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	65	60 to 70
2	Softening Point, °C	51.4	Min. 40°C
3	Ductility, cm	96	Min. 75cm
4	Flash point, °C	245	Min. 220°C
	Fire point, °C	272	

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Quality Manager

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****End of Report****

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DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID : CP-RW-2018-12-31-139 **Date: 02-02-19**

Project Name : Package no.3 (Package Consists of 21 Works)

Name of Work : Improvements and Asphalting to Roads and Drains at Telecom Layout, Ganeshnagara and Surrounding areas in Ward No. 09 Vidyaranyapura Sub Division.

Agency Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore - 560043.

Work Order Ref BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 31-01-19

Type of Mix : Tack coat

Date of test : 31-01-19

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.79
4	Final weight of plate after application of tack Coat (c)	Kg	0.803	0.813
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

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R KARTHIK RECHAN
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Quality Manager

CIVIL Pro BANGALORE Sig. Date

End of Report

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